

**AMENDMENTS TO THE CLAIMS:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) A photosensitive composition comprising:

- (a) 30-70% by weight of an epoxide-containing material;
- (b) 5-35% by weight of an acrylic material selected from aromatic acrylic material, cycloaliphatic acrylic material, or combinations thereof;
- (c) 05-40% by weight of a hydroxyl-containing material, wherein the hydroxyl-containing material is selected from 1,4-cyclohexanedimethanol, aliphatic and cycloaliphatic mono hydroxyl alkanols, ~~an aliphatic polycarbonate diol,~~ and linear and branched polytetrahydrofuran polyether polyols, and combinations thereof;
- (d) at least one cationic photoinitiator; and
- (e) at least one free-radical photoinitiator,

wherein a ratio of epoxy equivalents to hydroxyl equivalents in the composition is in the range of from 1.5 to 2.5.

2. (Previously Presented) The composition of claim 1, wherein the epoxide-containing material is selected from bis(2,3-epoxycyclopentyl)ether, 2,3-epoxy cyclopentyl glycidyl ether, 1,2-bis(2,3-epoxycyclopentyloxy)ethane, bis(4-hydroxycyclohexyl)methane diglycidyl ether, 2,2-bis(4-hydroxycyclohexyl)propane diglycidyl ether, diglycidyl ether of neopentyl glycol, 3,4-epoxycyclohexylmethyl-3,4-epoxycyclohexane, 3,4-epoxy-6-methylcyclohexylmethyl-3,4-epoxy-6-methylcyclohexanecarboxylate, di(3,4-epoxycyclohexylmethyl)hexanedioate, di(3,4-epoxy-6-methylcyclohexylmethyl)hexanedioate, ethylenebis(3,4-epoxycyclohexanecarboxylate), ethanedioldi(3,4-epoxycyclohexylmethyl)ether, vinylcyclohexene dioxide, dicyclopentadiene

diepoxide, 1,2-epoxytetradecane, a di(oxiranyl)poly(oxy-1,4-butanediyl), a partially acrylated bisphenol A epoxy, and 2-(3,4-epoxycyclohexyl-5,5-spiro-3,4-epoxy)cyclohexane-1,3-dioxane, and combination thereof.

3. (Previously Presented) The composition of claim 1, wherein the acrylic material is selected from 1,4-dihydroxymethyl-cyclohexane diacrylate, bisphenol A diacrylate, and ethoxylated bisphenol A diacrylate and combinations thereof.

4. (Cancelled).

5. (Original) The composition of claim 1, wherein the free-radical photoinitiator is a 1-hydroxyphenyl ketone.

6. (Original) The composition of claim 1, wherein the free-radical photoinitiator is selected from an alpha-hydroxyphenyl ketone, benzyl dimethyl ketal or 2,4,6-trimethylbenzoyldiphenylphosphine oxide.

7. (Original) The composition of claim 1, wherein the composition comprises 32-48% by weight of an epoxide-containing material.

8. (Original) The composition of claim 1, wherein the composition comprises 10-20% by weight of an acrylic material selected from aromatic acrylic material, cycloaliphatic acrylic material, or combinations thereof.

9. (Original) The composition of claim 1, wherein the composition comprises 10-39% by weight of a hydroxyl-containing material.

10. (Original) The composition of claim 1, wherein the composition comprises 35-69.9% by weight of an epoxide-containing material, 10-20% by weight of an acrylic material selected from aromatic acrylic material, cycloaliphatic acrylic material, or combinations thereof, and 10-39% by weight of a hydroxyl-containing material.

11. (Original) The composition of claim 10, wherein the epoxide-containing material includes 3,4-epoxycyclohexylmethyl-3,4-epoxycyclohexane carboxylate, 1,2-epoxytetradecane, diglycidyl ether of neopentyl glycol, or  $\alpha$ -(oxiranylmethyl)- $\omega$ -(oxiranylmethoxy) poly(oxy-1,4-butanediyl), or combinations thereof.

12. (Currently Amended) The composition of claim 1, wherein the hydroxyl-containing material includes a polytetrahydrofuran polyol, 1,4-cyclohexanedimethanol, ~~or an aliphatic polycarbonate diol,~~ or combinations thereof.

13. (Currently Amended) A three-dimensional article formed from a photosensitive composition comprising:

- (a) 30-70% by weight of an epoxide-containing material;
- (b) 5-35% by weight of an acrylic material selected from aromatic acrylic material, cycloaliphatic acrylic material, or combinations thereof;
- (c) ~~0~~5-40% by weight of a hydroxyl-containing material, wherein the hydroxyl-containing material is selected from 1,4-cyclohexanedimethanol, aliphatic and cycloaliphatic mono hydroxyl alkanols, ~~an aliphatic polycarbonate diol,~~ and linear and branched polytetrahydrofuran polyether polyols, and combinations thereof;
- (d) at least one cationic photoinitiator; and
- (e) at least one free-radical photoinitiator,

wherein a ratio of epoxy equivalents to hydroxyl equivalents in the composition is in the range of from 1.5 to 2.5.

14. (Original) The article of claim 13, wherein the composition comprises 35-69.9% by weight of an epoxide-containing material, 10-20% by weight of an acrylic material selected from

aromatic acrylic material, cycloaliphatic acrylic material, or combinations thereof, and 10-39% by weight of a hydroxyl-containing material.

15. (Original) The article of claim 13, wherein the epoxide-containing material includes 3,4-epoxycyclohexylmethyl-3,4-epoxycyclohexane carboxylate, 1,2-epoxytetradecane, diglycidyl ether of neopentyl glycol, or  $\alpha$ -(oxiranylmethyl)- $\omega$ -(oxiranylmethoxy) poly(oxy-1,4-butanediyl), or combinations thereof.

16. (Currently Amended) The article of claim 13, wherein the hydroxyl-containing material includes a polytetrahydrofuran polyol, 1,4-cyclohexanedimethanol, ~~or an aliphatic polycarbonate diol,~~ or combinations thereof.

17. (Currently Amended) A process for forming a three-dimensional article comprising:

- (1) coating a layer of a composition onto a surface, the composition comprising:
  - (a) 30-70% by weight of an epoxide-containing material;
  - (b) 5-35% by weight of an acrylic material selected from aromatic acrylic material, cycloaliphatic acrylic material, or combinations thereof;
  - (c) ~~05~~-40% by weight of a hydroxyl-containing material, wherein the hydroxyl-containing material is selected from 1,4-cyclohexanedimethanol, aliphatic and cycloaliphatic mono hydroxyl alkanols, ~~an aliphatic polycarbonate diol,~~ and linear and branched polytetrahydrofuran polyether polyols, and combinations thereof;
  - (d) at least one cationic photoinitiator; and
  - (e) at least one free-radical photoinitiator,

- (2) exposing the layer imagewise to actinic radiation to form an imaged cross-section, wherein the radiation is of sufficient intensity to cause substantial curing of the layer in the exposed areas;
- (3) coating a layer of the composition onto the previously exposed imaged cross-section;
- (4) exposing said thin layer from step (3) imagewise to actinic radiation to form an additional imaged cross-section, wherein the radiation is of sufficient intensity to cause substantial curing of the thin layer in the exposed areas and to cause adhesion to the previously exposed imaged cross-section;
- (5) repeating steps (3) and (4) a sufficient number of times in order to build up the three-dimensional article,

wherein a ratio of epoxy equivalents to hydroxyl equivalents in the composition is in the range of from 1.5 to 2.5.

18. (Original) The process of claim 17, wherein the actinic radiation is in the range of 180-650 nm.

19. (Previously Presented) The process of claim 17 wherein the exposure energy is in the range of 10-150 mJ/cm<sup>2</sup>.

20. (Original) The process of claim 17, wherein the epoxide-containing material includes 3,4-epoxycyclohexylmethyl-3,4-epoxycyclohexane carboxylate, 1,2-epoxytetradecane, diglycidyl ether of neopentyl glycol, or  $\alpha$ -(oxiranylmethyl)- $\omega$ -(oxiranylmethoxy) poly(oxy-1,4-butanediyl), or combinations thereof and the hydroxyl-containing material includes a polytetrahydrofuran polyol, 1,4-cyclohexanedimethanol, ~~or an aliphatic polycarbonate diol,~~ or combinations thereof.

21. (New) A photosensitive composition comprising:

- (a) 30-70% by weight of an epoxide-containing material;
- (b) 5-35% by weight of an acrylic material selected from aromatic acrylic material, cycloaliphatic acrylic material, or combinations thereof;
- (c) 5-40% by weight of a hydroxyl-containing material, wherein the hydroxyl-containing material is selected from 1,4-cyclohexanedimethanol, aliphatic and cycloaliphatic mono hydroxyl alkanols, an aliphatic polycarbonate diol, and linear and branched polytetrahydrofuran polyether polyols, and combinations thereof;
- (d) at least one cationic photoinitiator; and
- (e) at least one free-radical photoinitiator,

wherein a ratio of epoxy equivalents to hydroxyl equivalents in the composition is in the range of from 1.5 to 2.5.

22. (New) The composition of claim 21, wherein the epoxide-containing material is selected from bis(2,3-epoxycyclopentyl)ether, 2,3-epoxy cyclopentyl glycidyl ether, 1,2-bis(2,3-epoxycyclopentyl)oxyethane, bis(4-hydroxycyclohexyl)methane diglycidyl ether, 2,2-bis(4-hydroxycyclohexyl)propane diglycidyl ether, diglycidyl ether of neopentyl glycol, 3,4-epoxycyclohexylmethyl-3,4-epoxycyclohexane, 3,4-epoxy-6-methylcyclohexylmethyl-3,4-epoxy-6-methylcyclohexanecarboxylate, di(3,4-epoxycyclohexylmethyl)hexanedioate, di(3,4-epoxy-6-methylcyclohexylmethyl)hexanedioate, ethylenebis(3,4-epoxycyclohexanecarboxylate), ethanedioldi(3,4-epoxycyclohexylmethyl)ether, vinylcyclohexene dioxide, dicyclopentadiene diepoxide, 1,2-epoxytetradecane, a di(oxiranyl)poly(oxy-1,4-butanediyl), a partially acrylated bisphenol A epoxy, and 2-(3,4-epoxycyclohexyl-5,5-spiro-3,4-epoxy)cyclohexane-1,3-dioxane, and combination thereof.

23. (New) The composition of claim 21, wherein the acrylic material is selected from 1,4-dihydroxymethyl-cyclohexane diacrylate, bisphenol A diacrylate, and ethoxylated bisphenol A diacrylate and combinations thereof.

24. (New) The composition of claim 21, wherein the free-radical photoinitiator is a 1-hydroxyphenyl ketone.

25. (New) The composition of claim 21, wherein the free-radical photoinitiator is selected from an alpha-hydroxyphenyl ketone, benzyl dimethyl ketal or 2,4,6-trimethylbenzoyldiphenylphosphine oxide.

26. (New) The composition of claim 21, wherein the composition comprises 32-48% by weight of an epoxide-containing material.

27. (New) The composition of claim 21, wherein the composition comprises 10-20% by weight of an acrylic material selected from aromatic acrylic material, cycloaliphatic acrylic material, or combinations thereof.

28. (New) The composition of claim 21, wherein the composition comprises 10-39% by weight of a hydroxyl-containing material.

29. (New) The composition of claim 21, wherein the composition comprises 35-69.9% by weight of an epoxide-containing material, 10-20% by weight of an acrylic material selected from aromatic acrylic material, cycloaliphatic acrylic material, or combinations thereof, and 10-39% by weight of a hydroxyl-containing material.

30. (New) The composition of claim 29, wherein the epoxide-containing material includes 3,4-epoxycyclohexylmethyl-3,4-epoxycyclohexane carboxylate, 1,2-epoxytetradecane, diglycidyl ether of neopentyl glycol, or  $\alpha$ -(oxiranylmethyl)- $\omega$ -(oxiranylmethoxy) poly(oxy-1,4-butanediyl), or combinations thereof.

31. (New) The composition of claim 21, wherein the hydroxyl-containing material includes a polytetrahydrofuran polyol, 1,4-cyclohexanedimethanol, or an aliphatic polycarbonate diol, or combinations thereof.

32. (New) A three-dimensional article formed from a photosensitive composition comprising:

- (a) 30-70% by weight of an epoxide-containing material;
- (b) 5-35% by weight of an acrylic material selected from aromatic acrylic material, cycloaliphatic acrylic material, or combinations thereof;
- (c) 5-40% by weight of a hydroxyl-containing material, wherein the hydroxyl-containing material is selected from 1,4-cyclohexanedimethanol, aliphatic and cycloaliphatic mono hydroxyl alkanols, an aliphatic polycarbonate diol, and linear and branched polytetrahydrofuran polyether polyols, and combinations thereof;
- (d) at least one cationic photoinitiator; and
- (e) at least one free-radical photoinitiator,

wherein a ratio of epoxy equivalents to hydroxyl equivalents in the composition is in the range of from 1.5 to 2.5.

33. (New) The article of claim 32, wherein the composition comprises 35-69.9% by weight of an epoxide-containing material, 10-20% by weight of an acrylic material selected from aromatic acrylic material, cycloaliphatic acrylic material, or combinations thereof, and 10-39% by weight of a hydroxyl-containing material.

34. (New) The article of claim 32, wherein the epoxide-containing material includes 3,4-epoxycyclohexylmethyl-3,4-epoxycyclohexane carboxylate, 1,2-epoxytetradecane,



diglycidyl ether of neopentyl glycol, or  $\alpha$ -(oxiranylmethyl)- $\omega$ -(oxiranylmethoxy) poly(oxy-1,4-butanediyl), or combinations thereof.

35. (New) The article of claim 32, wherein the hydroxyl-containing material includes a polytetrahydrofuran polyol, 1,4-cyclohexanedimethanol, or an aliphatic polycarbonate diol, or combinations thereof.

36. (New) A process for forming a three-dimensional article comprising:

- (1) coating a layer of a composition onto a surface, the composition comprising:
  - (a) 30-70% by weight of an epoxide-containing material;
  - (b) 5-35% by weight of an acrylic material selected from aromatic acrylic material, cycloaliphatic acrylic material, or combinations thereof;
  - (c) 5-40% by weight of a hydroxyl-containing material, wherein the hydroxyl-containing material is selected from 1,4-cyclohexanedimethanol, aliphatic and cycloaliphatic mono hydroxyl alkanols, an aliphatic polycarbonate diol, and linear and branched polytetrahydrofuran polyether polyols, and combinations thereof;
  - (d) at least one cationic photoinitiator; and
  - (e) at least one free-radical photoinitiator,
- (2) exposing the layer imagewise to actinic radiation to form an imaged cross-section, wherein the radiation is of sufficient intensity to cause substantial curing of the layer in the exposed areas;
- (3) coating a layer of the composition onto the previously exposed imaged cross-section;

- (4) exposing said thin layer from step (3) imagewise to actinic radiation to form an additional imaged cross-section, wherein the radiation is of sufficient intensity to cause substantial curing of the thin layer in the exposed areas and to cause adhesion to the previously exposed imaged cross-section;
- (5) repeating steps (3) and (4) a sufficient number of times in order to build up the three-dimensional article,

wherein a ratio of epoxy equivalents to hydroxyl equivalents in the composition is in the range of from 1.5 to 2.5.

37. (New) The process of claim 36, wherein the actinic radiation is in the range of 180-650 nm.

38. (New) The process of claim 36, wherein the exposure energy is in the range of 10-150 mJ/cm<sup>2</sup>.

39. (New) The process of claim 36, wherein the epoxide-containing material includes 3,4-epoxycyclohexylmethyl-3,4-epoxycyclohexane carboxylate, 1,2-epoxytetradecane, diglycidyl ether of neopentyl glycol, or  $\alpha$ -(oxiranylmethyl)- $\omega$ -(oxiranylmethoxy) poly(oxy-1,4-butanediyl), or combinations thereof and the hydroxyl-containing material includes a polytetrahydrofuran polyol, 1,4-cyclohexanedimethanol, or an aliphatic polycarbonate diol, or combinations thereof.